

Abstract

A mediator molecule is immobilized on the surface of a metallic or ceramic implant material. An anchor molecule (e.g., dialdehyde or cyanogen bromide) having a functional group that covalently binds the mediator molecule is covalently bound to the surface, and the mediator molecule is coupled to the functional group of the anchor molecule. The implant material may comprise titanium, titanium alloy, aluminium or stainless steel or hydroxylapatite. Oxide units on the implant material surface can be increased preferably by treating with hot chromic-sulphuric acid for 0.5 to 3 hours at a temperature between 100 to 250°C prior to binding the anchor molecule. Also, prior to binding the anchor molecule, the surface of the implant material can be activated by reacting with a silane derivative. Mediator molecules include BMP protein, ubiquitin and antibiotics, and the implant material may be an artificial joint or coronary vessel support such as a stent.